

AMENDMENT TO THE CLAIMS

1. to 24. (Canceled)

25. (Previously Presented) An image processing method in a printing system receiving file data from an external terminal, converting the received file data to bit map image data by a plurality of processors, each processor performing a conversion process of an assigned job to bit map image data, and providing a plurality of pages of bit map image data in order to a printing engine, the printing engine printing the provided page of the bit map image data at a constant speed on a recording medium, the image processing method comprising the steps of:

receiving a page description language format of data including attribution information from the external terminal, the attribution information indicating at least a data structure of plural pages in the received data and type of objects which constitutes the page description language format data;

analyzing the attribution information included in the received page description language format data to segment a page into objects defined by the page description language format data;

independently assigning each object in the received page description language format data to a respective one of the plurality of processors as jobs of conversion processes converting the object into image data to a completion of the conversion processes for one page;

receiving bit map image data of each job from the plurality of processors without regard to a page order and storing the received bit map image data from the plurality of processors into a memory having a memory capacity for storing plural pages of bit map image data; and

reconstructing the bit map image data stored in the memory in page order to the printing engine.

26. (Original) An image processing method according to Claim 25, wherein, in a case of assigning one object to one processor, said assigning step selects one of the plurality of processors, which finishes a conversion process of the object to raster image data earlier than others.

27. (Original) An image processing method according to Claim 26, wherein each processor having a queue for storing assigned objects as jobs of conversion processes, and said assigning step assigns each object to one of the queues of the processors, and each processor performs the conversion process based on information of the job stored in the queue.

28. (Original) An image processing method according to Claim 27, wherein each queue includes information indicating estimation time required in completing the assigned jobs by each processor, and wherein said assigning steps selects one of the plurality of processors, which the estimation time in the queue is shorter than others.

29. (Previously Presented) An image processing method according to Claim 25, wherein the printing system having a conversion unit converting, into bit map image data, file data other than the page description language format data, and

wherein, in a case where the file data received is other than the page description language format data, said analyzing step judges, based on attribution information included in the received file data, a format of the received data, and said assigning step assigns a job of the conversion process of the received file data to the conversion unit.

30. (Previously Presented) An image processing method according to Claim 29, wherein the file data is judged to be of a Graphic Display Interface (GDI) format by said analyzing step.

31. (Previously Presented) An image processing method according to Claim 29, wherein the file data is judged to be of an Extensible Markup Language (XML) format by said analyzing step.

32. (Previously Presented) An image processing method according to Claim 30, wherein the conversion unit includes a video-graphics processing unit processing data for display, the video-graphics processing unit providing bit map image data of a predetermined size, and wherein the conversion unit divides a page of data in the file data into a plurality of segments, and converts the segment data into bit map image data, and

said reconstructing step combines the bit map image data of the plurality of segments into the page of bit map image data.

33. (Previously Presented) An image processing method according to Claim 29, wherein the conversion unit assigns tag information into each segment data, and wherein said reconstructing step performs the combining process based on the tag information.

34. (Previously Presented) An image processing method according to Claim 25, wherein the printing system comprises a printing engine for continuously receiving color image data having at least three color components in page unit and for printing the at least three color components of color image data on a recording medium in parallel at a constant speed,

wherein said receiving step receives a page description language format of data including at least two of the at least three color components as at least an object constituting the page description language format data, and

wherein said assigning step divides the object of the at least two color components into each color component data, and assigns each color component data as an independent job to at least two of the plurality of processors so that the two processors independently convert the at least two color component data into bit map image data of the at least two color components in parallel.

35. to 43. (Canceled)

44. (Previously Presented) A printer controller apparatus including a plurality of parallel developing means for developing print data into image data, comprising:

receiving means for receiving a plurality of pages of print data, said plurality of pages having a designated order;

generating means for generating a plurality of object data and a plurality of component data corresponding to each color component of the object data from each page of print data received from said receiving means;

first control means for controlling said plurality of parallel developing means, said first control means assigning said color component data and said object data generated by said generating means to said plurality of developing means according to the object data and to a respective type of said corresponding color component data, said plurality of parallel developing means generating image data from the color component data and the object data;

means for storing said image data generated by said plurality of parallel developing means independent of said page order; and

second control means for controlling output of said stored image data on a printing apparatus based on said page order.

45. (Previously Presented) A printer controller apparatus according to Claim 44, wherein said second control means controls output of said image data based on an ordering of colors to be outputted on said printing apparatus.

46. (Previously Presented) A printer controller apparatus according to Claim 44, wherein said generating means generates component data corresponding to a color component and an object by page.

47. (Previously Presented) A printer controller apparatus according to Claim 44, wherein said generating means divides each page into at least two objects and generates component data corresponding to a color component for each object.

48. (Previously Presented) A printer controller apparatus according to Claim 44, while at least one of said plurality of parallel developing means is processing component and object data of one page, said first control means assigns component and object data of another page to unused ones of said plurality of parallel developing means.

49. (Previously Presented) A printer controller apparatus according to Claim 44, wherein said receiving means receives print data for more than one print job, and wherein while at least one of said plurality of parallel developing means is processing component and object data of one print job, said first control means assigns component and object data of another print job to unused ones of said plurality of parallel developing means.

50. (Previously Presented) A print controller apparatus according to Claim 44, wherein said plurality of parallel developing means is executed by one processing unit.

51. (Previously Presented) An image processing method according to Claims 25, wherein the assigning step further comprises segmenting the objects into color component data, so that a job is segmented into each set of object and color component.

52. (Previously Presented) An image processing method according to Claim 31, wherein the Extensible Markup Language (XML) formatted data is processed by an XML formatter, so that the XML data is converted to bit map image data.

53. (Currently Amended) A printing apparatus comprising:
receiving means for receiving ~~a plurality of pages of~~ print data;
a plurality of ~~parallel~~ different developing means for developing the print data into image data; and

printing means for printing the image data;

wherein said receiving means further comprises ~~[[:]]~~ judging means for judging whether ~~or not~~ a format of the received print data ~~represents a predetermined description language~~ is a page description language or is not a page description language (PDL), and

wherein said judging means assigns the print data to one of the plural different developing means respectively based on corresponding to the judging result.

54. (Currently Amended) A printing apparatus according to Claim 53, wherein the format that is judged ~~not to represent the predetermined description language and to represent~~ not to be a page description format (PDL) is a Graphic Display Interface (GDI) format.

55. (Currently Amended) A printing apparatus according to Claim 53, wherein the format that is judged ~~not to represent the predetermined description language and to represent~~ to be a non page description language (PDL) is an Extensible Markup Language (XML) format.

56. to 59. (Canceled)

60. (New) A printing apparatus comprising:

receiving means for receiving print data;

developing means for developing the print data to image data; and

printing means for printing the image data;

wherein said receiving means further comprises judging means for judging whether a format of the received print data is a page description language or is not a page description language (PDL), and control means for controlling assignment of the print data;

wherein when said judging means judges that the format is a page description language (PDL), said control means assigns the print data to said developing means, and

wherein when said judging means judges that the format is not a page description language (PDL), said control means assigns the print data to processing means which is composed separately from said developing means.

61. (New) A printing apparatus according to Claim 60, wherein the processing means is a video graphics means.

62. (New) A printing apparatus according to Claim 60, wherein the processing means is an Extensible Markup Language (XML) means.

63. (New) A printing method comprising:
receiving print data;
judging whether a format of the received print data is a page description language or is not a page description language (PDL);
assigning the print data to one of plural different developing means respectively corresponding to the judging result, each of the plural different developing means for developing print data into image data; and
printing the developed image data.

64. (New) A printing method according to Claim 63, wherein the format that is judged not to be a page description format (PDL) is a Graphic Display Interface (GDI) format.

65. (New) A printing method according to Claim 63, wherein the format that is judged to be a non page description language (PDL) is an Extensible Markup Language (XML) format.

66. (New) A printing method comprising:

- receiving print data;
- judging means for judging whether a format of the received print data is a page description language or is not a page description language (PDL);
- assigning the print data to developing means for developing the print data into image data in a case where the judging step judges that the format of the received print data is a page description language (PDL);
- assigning the print data to processing means which is composed separately from the developing means, said processing means for processing the print data into image data, in a case where the judging step judges that the format of the received print data is not a page description language (PDL); and
- printing the image data.

67. (New) A printing method according to Claim 66, wherein the processing means is a video graphics means.

68. (New) A printing method according to Claim 66, wherein the processing means is an Extensible Markup Language (XML) means.